

### **REMARKS**

Claims 1-2 and 6-13 are pending in the application. Claims 3-5 have been cancelled. New claims 12 and 13 have been added. Claims 1 and 12 are in independent form.

#### **Claim Rejections – 35 U.S.C. § 103**

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication 2003/0209655 to Wang (“the ‘655 reference”). Applicants respectfully traverse the rejection.

The ‘655 reference discloses a single core sensor 401 having an elongated optical fiber 410. The sensor 401 includes a pair of plates 471, 472 with one of the plates 471 having ridges 471a that are offset with respect to a plurality of ridges 472a of the second plate 472. When opposing forces are applied to the plates 471, 472, the opposing ridges 471a, 472a create a series of micro-bends in the optical fiber 410.

Claim 1 of the above-captioned application claims a multi-layer sensor having an optical wave guide (18, 42, 60). The optical wave guide (18, 42, 60) defines a structure (52, 82, 104) in which the optical wave guide (18, 42, 60) is contained. The structure (52, 82, 104) has a front layer (54, 84, 106) and a rear layer (56, 86), which transmits an external application of force directly onto the optical wave guide (18, 42, 60). The structure further includes clips (34, 102) for retaining the optical wave guide (18, 42, 60) in a curved path and ribs (38, 62, 88) for deforming the optical wave guide (18, 42, 60) in a single plane.

**The ‘655 reference does not disclose clips (34, 102) for retaining an optical wave guide (18, 42, 60) in a curved path and ribs (38, 62, 88) for deforming the optical wave guide (18, 42, 60) in a single plane, as required by claim 1 of the above-captioned application.** In the ‘655 reference, there are no clips for retaining the optical fiber 410 in a curved path. Rather, the optical fiber 410 is disposed in a straight path until periodic opposing forces are applied to the plates 471, 472. When the periodic opposing forces are applied to the plates 471, 472, the ridges 471a, 472a create a series of micro-bends in the optical fiber 410, as

shown in Figure 4(c). The series of micro-bends are *temporally* created to produce long period gratings in the optical fiber 410 for measuring temperature and/or pressure. However, there are no clips that retain the optical fiber 410 in a curved path, as required by claim 1 of the above-captioned application.

It would be appreciated by one of ordinary skill in the art that the clips (34, 102) in the above-captioned application are different than the ribs (38, 62, 88) in the above-captioned application. The clips (34, 102) retain an optical wave guide without the need for any other structural element. The clips (34, 102) and the ribs (38, 62, 88) are distinct structural elements and the use of both clips (34, 102) and ribs (38, 62, 88) is not shown in the '655 reference.

Claims 2 and 3 depend from claim 1 and, as such, are construed to incorporate by reference all the limitations of the claim to which they refer, *see* 35 U.S.C. §112, fourth paragraph. Thus, claims 2 and 3 must be read as including the limitation of clips (34, 102) for retaining an optical wave guide (18, 42, 60) in a curved path and ribs (38, 62, 88) for deforming the optical wave guide (18, 42, 60) in a single plane.

Further, the cited references do not provide any teaching, suggestion, or motivation of clips (34, 102) for retaining an optical wave guide (18, 42, 60) in a curved path and ribs (38, 62, 88) for deforming the optical wave guide (18, 42, 60) in a single plane. As a result, Applicants contend that the invention set forth in claim 1 of the above-captioned application would not have been obvious to one skilled in the art at the time of invention.

Therefore, Applicants respectfully request that the rejection of claims 1-3 under 35 U.S.C. §103(a) as being unpatentable over the '655 reference be withdrawn.

Claims 6-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the '655 reference, as applied to claim 1 above, in view of U.S. Patent 5,913,245 to Grossman ("the '245 reference"). Applicants respectfully traverse the rejection.

Claims 6-11 depend from claim 1 and, as such, are construed to incorporate by reference all the limitations of the claim to which they refer, *see* 35 U.S.C. §112, fourth paragraph. Thus,

claims 6-11 must be read as including the limitation of clips (34, 102) for retaining an optical wave guide (18, 42, 60) in a curved path and ribs (38, 62, 88) for deforming the optical wave guide (18, 42, 60) in a single plane.

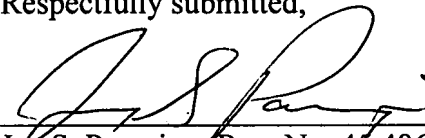
Therefore, Applicants respectfully request that the rejection of claims 6-11 under 35 U.S.C. §103(a) as being unpatentable over the '655 reference, as applied to claim 1 above, in view of the '245 reference be withdrawn.

New claims 12 and 13 have been added. New independent claim 12 claims a multi-layer sensor including a first layer extending in a longitudinal direction and including a plurality of clips mounted therealong, the plurality of clips spaced apart from one another longitudinally and offset from one another in a lateral direction; an optical wave guide retained solely by the plurality of clips, the optical wave guide extending through the plurality of clips in a curved path; and a second layer facing the first layer and selectively transmitting an external application of force to the optical wave guide, the second layer including ribs for deforming the optical wave guide towards the first layer in response to an impact in order to change the amount of light carried per unit of time through the optical wave guide. Claim 12 is not anticipated by or obvious in view of the cited references.

It is respectfully submitted that this patent application is in condition for allowance, which allowance is respectfully solicited. If the Examiner has any questions regarding this amendment or the patent application, the Examiner is invited to contact the undersigned.

The Commissioner is hereby authorized to charge any additional fee associated with this Communication to Deposit Account No. 50-1759. A duplicate of this form is attached.

Respectfully submitted,



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Appl'n No: 10/533,165  
Amdt dated October 10, 2007  
Reply to Office action of May 10, 2007

Date: 10/10/07  
Attorney Docket No: 22204-119468